



Mathematics Year 9/10 Higher IGCSE	
Edexcel 9 - 1	
Term	Curriculum outline
Autumn 1	<ul style="list-style-type: none"> • DECIMALS: Convert recurring decimals into fractions; round to a given number of significant figures or decimal places; use estimation to evaluate approximations to numerical calculations; use a scientific electronic calculator to determine numerical results. • SPECIAL NUMBERS, POWERS AND ROOTS: Express integers as product of powers of prime factors; find HCF and LCM; understand the meaning of surds; manipulate surds, including rationalising a denominator; use index laws to simplify and evaluate numerical expression involving integer, fractional and negative powers. • ALGEBRAIC MANIPULATION: Use index notation involving fractional, negative and zero powers; use index laws in simple cases; collect like terms; multiply a single term over a bracket; take out common factors; expand the product of two or more linear expressions; understand the concept of a quadratic expression and be able to factorise such expressions; manipulate algebraic fractions where the numerator and/or the denominator can be numeric, linear or quadratic; complete the square for a given quadratic expression; use algebra to support and construct proofs. • EXPRESSIONS, FORMULAE AND REARRANGING FORMULAE: Substitute positive and negative integers, decimals and fractions for words and letters and symbols; derive a formula or expressions; understand the process of manipulating formulae or equations to change the subject, to include cases where the subject may appear twice or a power of the subject occurs; set up problems involving direct or inverse proportion and relate algebraic solutions to graphical representation of the equations. • LINEAR EQUATIONS AND INEQUALITIES: Solve linear equations, with integer or fractional coefficients, in one unknown in which the unknown appears on either side or both sides of the equations; set up simple linear equations from given data; solve simple linear inequalities in one variable and represent the solution set on a number line.
Autumn 2	<ul style="list-style-type: none"> • SEQUENCES: Understand and use common difference and first term in an arithmetic sequence; know and use nth term; find the sum of the first n terms of an arithmetic series. • GRAPHICAL REPRESENTATION OF DATA: Construct and interpret histograms; construct cumulative frequency diagrams from tabulated data; use cumulative frequency diagrams. • STATISTICAL MEASURES: Understand the concept of average; calculate the mean, median, mode and range for a discrete data set; calculate an estimate for the mean for grouped data; identify the modal class for grouped data; estimate the median from a cumulative frequency diagram; understand the concept of a measure of spread; find the interquartile range from a discrete data set; estimate the interquartile range from a cumulative frequency diagram.
Spring 1	<ul style="list-style-type: none"> • FRACTIONS: Order fractions and calculate a given fraction of a given quantity; express a given number as a fraction of another number; convert a fraction to a decimal or percentage; use common denominators to add and subtract fractions and mixed numbers; understand and use fraction as multiplicative inverses; multiply and divide fractions and mixed numbers. • PERCENTAGES: Express a given number as a percentage of another number; express a percentage as a fraction and as a decimal; understand the multiplicative nature of percentage as operators; solve simple percentage problems, including percentage increase and decrease; use reverse percentage; use compound interest and depreciation; use repeated percentage change; solve compound interest problems.



	<ul style="list-style-type: none"> • RATIO AND PROPORTION: Use ratio notation, including reduction to its simplest form and its various links to fraction notation; divide a quantity in a given ratio or ratios; use the process of proportionality to evaluate unknown quantities; calculate an unknown quantity from quantities that vary in direct proportion; use and apply number in everyday personal, domestic or community life; carry out calculations using standard units of mass, length, area and volume and capacity; understand and carry out calculation using time, and carry out calculations using money, including converting between currencies.
<p style="text-align: center;">Spring 2</p>	<ul style="list-style-type: none"> • INDICES AND STANDARD FORM: Use index notation and index laws for multiplication and division of positive and negative integer powers including zero; calculate with and interpret number in the form $a \times 10^n$ where n is an integer and $1 \leq a < 10$; solve problems involving standard form. • COMPOUND MEASURES: Use compound measure such as speed, density and pressure; convert measurements within the metric system to include linear and area units; convert between units of volume within the metric system. • GEOMETRY OF SHAPES: Use angle properties of intersecting lines, parallel lines and angles on a straight line; understand the terms 'isosceles', 'equilateral', and 'right-angled triangles' and the angle properties of these triangles; understand and use the term 'quadrilateral' and the angle sum property of quadrilaterals; understand the term 'regular polygon' and calculate interior and exterior angles of regular polygon; understand and use the angle sum of polygons; provide reasons, using standard geometrical statements, to support numerical values for angles obtained in any geometrical context involving lines, polygons and circles.
<p style="text-align: center;">Summer 1</p>	<ul style="list-style-type: none"> • REAL LIFE GRAPHS: Interpret information presented in a range of linear and non-linear graphs. • LINEAR GRAPHS: Determine the coordinates of the midpoint of a line segment, given the coordinates of the two end points; find the gradient of a straight line; recognise that equations of the form $y = mx + c$ are straight line graphs; recognise, generate points and plot graphs of linear functions; calculate the gradient of a straight line given the coordinates of two points; find the equations of a straight line parallel to a given line; find the equation of a straight line perpendicular to a given line; identify regions on rectangular Cartesian graphs defined by linear inequalities. • QUADRATIC EQUATIONS AND GRAPHS: Solve quadratic equations by factorisation; solve quadratic equations by using the quadratic formula or completing the square; form and solve quadratic equations from data given in a context; solve quadratic inequalities in one unknown and represent the solution set on a number line; recognise, generate points and plot graphs of quadratic functions.
<p style="text-align: center;">Summer 2</p>	<ul style="list-style-type: none"> • CONSTRUCTIONS AND BEARINGS: Construct triangles and other 2D shapes using a combination of a ruler, protractor and compass; construct the perpendicular bisector of a line segment; construct the bisector of an angle; understand angle measure including 3 figure bearings; solve problems using scale drawings; use and interpret maps and scale drawings. • PERIMETER, AREA AND VOLUME: Find the perimeter of shapes made from triangles and rectangles; find the area of simple shapes using the formulae for the areas of triangles and rectangles; find the area of a parallelogram and trapezia; find perimeters and areas of sectors of circles; find the surface area of a simple shape using the area formulae for triangles and rectangles; find the surface area of a cylinder; find the volume of a prism, including cuboids and cylinders, using an appropriate formula; find the surface area and volume of a sphere and a right circular cone using relevant formulae. • PYTHAGORAS' THEOREM AND TRIGONOMETRY: Know, understand and use Pythagoras' theorem in 2D; know, understand and use sine, cosine and tangent of acute angles to determine lengths and angles of a right-angled triangle; apply trigonometrical methods to solve problems in 2D; understand and use sine, cosine and tangent of obtuse angles; understand and use angles of elevation and depression.



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